

What is claimed is:

1. A dedicated apparatus for detecting variations in molecular structures of organism tissues, characterized in that it comprises a Fourier transform infrared spectrometer and a set of additional accessories, and said additional accessories includes mid-IR fiber optics (denoted as fiber) sampling attachment, a fiber coupling part, and an infrared detector part, said additional accessories is disposed on the left, right or middle of the Fourier transform infrared spectrometer.

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2. The dedicated apparatus as claim1, wherein said fiber sampling attachment comprises a mid-infrared incident fiber, a mid-infrared exiting fiber and a fiber ATR probe, the incident fiber and the exiting fiber are connected to the fiber ATR probe; the fiber coupling part comprises an abaxial parabolic mirror and a precise fine-tuning mechanism; and the infrared detector part comprises an abaxial parabolic mirror, a detector and a 3-dimensional tuning holder.

20 3. The dedicated apparatus as claim 1 or 2, wherein the fiber coupling part is placed between an interferometer part of the Fourier transform infrared spectrometer and the infrared detector part, all of them are fixed on an optical table, and the fiber sampling attachment is fixed on the fiber coupling part, all these parts together with the interferometer part and an infrared light source constitute an integrated Fourier transform infrared spectrometer light path system.

25 4. The dedicated apparatus as claim 1 or 2, wherein a protection layer of steel, silicon resin or organic macromolecule plastic is placed on the outside wall of the fiber and the fiber ATR probe.

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5. The dedicated apparatus as claim 2, wherein the structure of the fiber ATR probe is of tapered shape or cylindered shape with inclined section.

6. The dedicated apparatus as claim 2, wherein the mid-infrared incident 5 fiber and the exiting fiber are solid fibers made up of materials capable of transmitting infrared light or hollow fibers with a metal coating.

7. The dedicated apparatus as claim 2, wherein the light path part is sealed in whole, and the fiber sampling attachment and the other parts of the 10 dedicated apparatus can be connected or disconnected by connectors outside the apparatus.

8. A method for detecting variations in molecular structure of organism tissues, comprising operative steps as follows: using the dedicated apparatus 15 as claim 1, placing the fiber ATR probe on the skin surface of a region to be tested, and scanning more than one times, wherein the resolution of the apparatus is $1\text{-}32\text{ cm}^{-1}$, preferably 4 cm^{-1} or 8 cm^{-1} , and the range of the spectrum is $800\text{-}4000\text{ cm}^{-1}$.

20 9. The method as claim 8, wherein the organism tissue is the mammary gland, and the range of the spectrum is $800\text{-}4000\text{ cm}^{-1}$.

10. The method as claim 8, wherein the organism tissue is the thyroid gland, and the range of the spectrum is $2800\text{-}3800\text{ cm}^{-1}$ and $1000\text{-}1800\text{ cm}^{-1}$.

25 11. The method as claim 8, wherein the organism tissue is the parotid gland, and the range of the spectrum is $800\text{-}4000\text{ cm}^{-1}$.

12. The method as claim 8, wherein the organism tissues are the 30 gallbladder, stomach or liver, and the range of the spectrum is $2800\text{-}3800\text{ cm}^{-1}$

and 1000 -1800 cm⁻¹.

13. A method for diagnosing pathologic changes of tissues in human body by detecting the variation in molecular structures of the organism tissues, 5 characterized in detecting surface tissues of a human body by means of a mid-infrared spectrometer and a mid-infrared fiber ATR probe, and diagnosing the degree of pathologic changes in the organism tissue according to criteria concluded based on variations in peak position, peak intensity and peak shape (peak area) of characteristic absorption bands of the organism tissue in 10 the range of 800-1800 cm⁻¹ and 2800-3800 cm⁻¹, the method comprising steps of: using the dedicated apparatus as claim 1, placing the fiber ATR probe on the skin surface of a region to be tested, and scanning more than one times, wherein the resolution of the apparatus is 1 cm⁻¹-32 cm⁻¹, and the range of the spectrum is 800-4000 cm⁻¹.

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14. A method for diagnosing pathologic changes in human body tissues by detecting variations in structures of molecules of the organism tissues, comprising steps of:

20 setting operating parameters of the apparatus, said operating parameters including scanning rate, the number of scanning, resolution of the apparatus and the range of spectrum;

scanning the air background to obtain a background spectrum;

cleaning the body surface skin of a region to be tested by alcohol and water;

25 placing the ATR probe in tight contact with the skin of the region to be tested after the alcohol and the water volatilize out, and performing test;

scanning and recording the skin spectrum;

automatically processing and analyzing the resulting spectrum together with normal and tumor spectra in database; and

30 diagnosing whether the pathological changes of tissue is malignant

tumor or not.

15. The method as claim 14, wherein the range of the spectrum scanned is 800-4000 cm^{-1} .

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16. The method as claim 14, wherein the range of the spectrum scanned is 1200-1800 cm^{-1} .

17. The method as claim 14, wherein the resolution is 1-32 cm^{-1} .

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18. The method as claim 14, wherein the resolution is 4 or 8 cm^{-1} .